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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/862,720  | 05/23/2001  | David Di Huo         | 2925-0497P          | 1180             |
| 30594   | 7590        | 02/08/2005           | EXAMINER            |                  |
| HARNESS, DICKEY & PIERCE, P.L.C.<br>P.O. BOX 8910<br>RESTON, VA 20195 |             |                      | AGHDAM, FRESTEH N   |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2631                |                  |

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                |                  |
|------------------------------|--------------------------------|------------------|
| <b>Office Action Summary</b> | Application No.                | Applicant(s)     |
|                              | 09/862,720                     | HUO, DAVID DI    |
|                              | Examiner<br>Freshteh N. Aghdam | Art Unit<br>2631 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 23 May 2001.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-10 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite: the expression "generating infinite mutual orthogonal sequences" is indefinite because it is impossible to reach infinity, which applicant regards as the invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al (US Patent 5,937,002).

As to claim 1, Andersson et al teach a frequency-hopping generator to generate the frequency hop sequences within a time interval wherein the frequency sequence is in matrix form (Col. 9, Lines 6-48). The cited table (Col. 9, Lines 35-45) could be represented as follow:

| USERS (0-6) |    |    |    |    |    |    | $\Delta t$ |
|-------------|----|----|----|----|----|----|------------|
| f4          | f5 | f6 | f1 | f2 | f3 | f0 | 0          |
| f5          | f6 | f2 | f3 | f4 | f0 | f1 |            |
| f6          | f3 | f4 | f5 | f0 | f1 | f2 |            |

One of ordinary skill in the art would clearly recognize that the elements of the matrix can be represented in vector form, which is a type of mathematical representation, and since the pseudo random coding is used then the frequencies are generated simultaneously. Therefore, it would have been obvious to one of ordinary skill in the art to use the teaching of Andersson et al in order to use the best channels with respect to interference (Abstract).

As to claim 2, Andersson et al teach a frequency sequence in matrix form that the number of rows are greater than the number of columns (Col. 9, Lines 6-48).

As to claims 3 and 4, Andersson et al disclose that the number of periods and channels (i.e. frequencies) are design choices (Col. 9, Lines 25 and 26; Col. 10, Lines 5-12). Therefore, it would have been obvious to one of ordinary skill in the art to apply the teaching of Andersson et al in order to have different numbers of periods and channels corresponding to different applications and designs.

As to claim 5, Andersson et al teach a method of generating frequency hop sequences in a matrix form in which the matrix includes unique frequencies see table drawn above.

As to claim 6, Andersson et al teach a method of generating a frequency sequence comprising determining the number of hop frequencies ( $C_j$ , where  $j=jm-jl-jh$ ), determining a specific sequence period and repetition distance ( $\Delta t = 3$ ), generating several frequency sequences, and generating a matrix including the several frequency sequences see the above table.

As to claim 7, Andersson et al disclose that the number of periods and channels (i.e. frequencies) are design choices (Col. 9, Lines 25 and 26; Col. 10, Lines 5-12).

As to claim 8, Andersson et al disclose that the method of generating frequency hop sequences is to ensure that not more than one base station will use the same channel at any time (Col. 9, Lines 3-5; Col. 10, Lines 1-3).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Costanza et al (US Patent 4,066,964) and Koga et al (US Pub. 2001/0001617).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam

January 31, 2005

M. GJ  
MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER

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